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QUANTITATIVE DATA COLLECTION METHODS

Quantitative research methods describe and measure the level of occurrences on the basis of numbers and calculations. In other words, quantitative studies mainly examine relationships between numerically measured variables with the application of statistical techniques. Qualitative data collection methods are based on random sampling and structured data collection instruments. Findings of quantitative studies are usually easy to present, summarize, compare and generalize.

Quantitative data gathering strategies include:

1. Administering surveys with closed‐ended questions (e.g., face‐to face and telephone interviews, mail questionnaires, etc.).

2. Experiments/clinical trials.

3. Observing and recording well‐defined events (e.g., counting the number of patients waiting in emergency at specified times of the day).

4. Obtaining relevant data from management information systems.

The main characteristics are:

• The data is usually gathered using structured research instruments.

• The results are based on larger sample sizes that are representative of the population.

• The research study can usually be replicated or repeated, given its high reliability.

• Researcher has a clearly defined research question to which objective answers are sought.

• All aspects of the study are carefully designed before data is collected.

• Data are in the form of numbers and statistics, often arranged in tables, charts, figures, or other non-textual forms.

• Project can be used to generalize concepts more widely, predict future results, or investigate causal relationships.

• Researcher uses tools, such as questionnaires or computer software, to collect numerical data.

METHODS OF DATA COLLECTION

1. INTERVIEWS

In quantitative research (survey research), interviews are more structured than in qualitative

research. In a structured interview, the researcher asks a standard set of questions and nothing more. It includes:

**a. Telephone interviews;** this include phone conversations.

**Advantages:**

* Less time consuming
* Less expensive
* Researcher has ready access to anyone who has a telephone.
* Higher response rate than the mail questionnaire.
* Can be fully automated using CATI (Computer Assisted Telephone Interviewing) saving

data processing time.

**Disadvantages:**

* The response rate is not as high as the face‐to‐face interview.
* The sample may be biased as only those people who have phones are contacted

**b. Face‐to‐face interviews:** involves meeting participants one-on-one and asking questions from the questionnaires and ticking their response.

**Advantages:**

* Enables the researcher to establish rapport with potential participants and therefore

gain their cooperation.

* Yields the highest response rates in survey research.
* Allows the researcher to clarify ambiguous answers and when appropriate, seek follow‐

up information.

**Disadvantages:**

* Impractical when large samples are involved
* Can be time consuming and expensive.

**c. Computer Assisted Personal Interviewing (CAPI):** is a form of personal interviewing, but

instead of completing a questionnaire, the interviewer brings along a laptop or hand‐held

computer to enter the information directly into the database.

**Advantages:**

* Saves time involved in processing the data.
* Saves the interviewer from carrying around hundreds of questionnaires.

**Disadvantages:**

* Can be expensive to set up.
* Requires that interviewers have computer and typing skills.

2. QUESTIONNAIRES

Questionnaires often make use of checklist and rating scales.  These devices help simplify and

quantify people's behaviors and attitudes.  A checklist is a list of behaviors, characteristics, or

other entities the researcher is looking for. Either the researcher or survey participant simply

checks whether each item on the list is observed, present or true or vice versa.  A rating scale is

more useful when a behavior needs to be evaluated on a continuum.  They are also known as

**Likert scales.**

**a. Mail questionnaires**

**Advantages:**

* Can be sent to a large number of people.
* Saves the researcher time and money compared to interviewing.
* People are more truthful while responding to the questionnaires regarding controversial

issues in particular due to the fact that their responses are anonymous.

* Allow the respondent to answer at their leisure.

**Disadvantages:**

* In most cases, the majority of people who receive questionnaires don't return them.

Therefore:

* Over‐sampling may be necessary if doing a one‐time mail out in order to get

enough completed questionnaires to be generalizable to the population.

* Follow‐up reminders to participants encouraging them to complete the questionnaire may be necessary, thereby increasing the time and cost to conduct the study.
* May need to offer incentives to increase response rate.
* Time – mail surveys take longer than other types of surveys.

**b. Web‐based questionnaires:** A new and inevitably growing methodology is the use of internet based research.  This wouldmean receiving an e‐mail on which you would click on an address that would take you to asecure web‐site to fill in a questionnaire.

**Advantages:**

* This type of research is often quicker and less detailed.
* Very cost effective.

**Disadvantages:**

* Excludes people who do not have a computer or are unable to access a computer.
* Need to have access to email addresses.
* Many worksites have screening mechanisms in place blocking access to employee emails.
* The validity of such surveys may be in question as people might be in a hurry to complete it and so might not give accurate responses.

**Probability sampling method**

A probability sampling method is any method of sampling that utilizes some form of random

Selection. In order to have a random selection method, some process or procedure that assures that the different units in the population have equal probabilities of being chosen. Computers are

used for generating random selection in more complex projects.

QUALITATIVE DATA COLLECTION METHODS

These data deals with quality, so that they are descriptive rather than numerical in nature. Unlike quantitative data, they are generally not measurable and are only gained mostly through observation. Narratives often make use of adjectives and other descriptive words to refer to data on appearance, color, texture, and other qualities.  Furthermore, qualitative methods can be used to improve the quality of survey‐based quantitative evaluations by helping generate evaluation

hypothesis; strengthening the design of survey questionnaires and expanding or clarifying

quantitative evaluation findings.

These methods are characterized by the following attributes:

1. They tend to be open‐ended and have less structured protocols (i.e., researchers may

change the data collection strategy by adding, refining, or dropping techniques or

informants).

2. They rely more heavily on interactive interviews; respondents may be interviewed

several times to follow up on a particular issue, clarify concepts or check the reliability

of data.

3. They use triangulation to increase the credibility of their findings (i.e., researchers rely

on multiple data collection methods to check the authenticity of their results).

4. Generally, their findings are not generalizable to any specific population; rather each

case study produces a single piece of evidence that can be used to seek general patterns

among different studies of the same issue.

Regardless of the kinds of data involved, data collection in a qualitative study takes a great deal of time.  The researcher needs to record any potentially useful data thoroughly, accurately and systematically, using field notes, sketches, audiotapes, photographs and other suitable means.

The qualitative methods most commonly used in evaluation can be classified in three broad

categories:

1. In‐depth interview

2. Observation methods

3. Document review

1. In‐depth interviews: In‐depth interviews are a useful qualitative data collection technique that can be used for a variety of purposes, including; needs assessment, program refinement, issue identification and strategic planning. In‐depth interviews are most appropriate for situations in which you want to ask open‐ended questions that elicit depth of information from relatively few people.

2. Observation methods: It requires that the researcher become a participant in the culture or context being observed.  Participant observation often requires months or years of intensive work because the researcher needs to become accepted as a natural part of the culture in order to assure that the observations are of the natural phenomenon.

3. Document review: Document review is a way of collecting data by reviewing existing documents. The documents may be internal to a program or organization (such as records of what components of an asthma management program were implemented in schools) or may be external (such as records of emergency room visits by students served by an asthma management program).

**Focus groups:** A focus group is a group interview of approximately six to twelve people who share similar characteristics or common interests. A facilitator guides the group based on a predetermined set of topics. The facilitator creates an environment that encourages participants to share their perceptions and points of view. Focus groups are a qualitative data collection method, meaning that the data is descriptive and cannot be measured numerically.

**Advantages:**

* Quick and relatively easy to set up.
* The group dynamic can provide useful information that individual data collection does

not provide.

* Is useful in gaining insight into a topic that may be more difficult to gather through other

data collection methods.

**Disadvantages:**

* Susceptible to facilitator bias.
* The discussion can be dominated or sidetracked by a few individuals.
* Data analysis is time consuming and needs to be well planned in advance.
* Does not provide valid information at the individual level.
* The information is not representative of other groups.